

The value impact of international and industrial diversification on malaysian firms: firm-level and industry-level analysis

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Abstract

The aim of this study is to examine the relationship between diversification and firm value among Malaysian listed firms. Based on 267 firms over 2001- 2009, our results show that international diversification reduces firm value, but industrial diversification enhances it. The results are robust to controlling for variables that might affect the firm value based on some previous established studies. We find that ownership identity also affects firm value: foreign-owned firms significantly reduce the discount on firm value relative to government and family-owned firms in the context of international diversification. However, when investigating each industry separately, diversification impacts on firm value reveal slight different results: international diversification actually enhances the firm value for consumer product and plantation industries, and industrial diversification reduces firm value for plantation industry.

Keywords:

Firm value, International diversification, Industrial diversification, Ownership structure

JEL classification:

G32.

El impacto de la diversificación internacional e industrial en la valoración de las empresas de Malasia: un análisis a escala empresarial y sectorial

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Resumen

El objetivo de este estudio es el análisis de la relación entre la diversificación y la valoración de la empresa a partir de una serie de empresas malayas. En concreto, para llevar a cabo dicho análisis se utiliza la información correspondiente a 267 compañías durante el periodo 2001-2009. Los resultados muestran que la diversificación internacional reduce el valor de la empresa, pero que la diversificación sectorial lo aumenta. Los resultados obtenidos son robustos al control de las variables que en estudios previos se han considerado como que podrían afectar al valor de las compañías. También se concluye que la identidad de la propiedad también afecta al valor de la empresa, de tal forma que, en el contexto de la diversificación internacional, la reducción en el valor de la compañía en el caso de la propiedad extranjera es significativamente menor que en el caso de las compañías públicas o de propiedad familiar. Sin embargo, cuando se analiza cada sector de forma separada, el impacto de la diversificación es ligeramente distinto: la diversificación internacional aumenta el valor de las empresas de productos de consumo y del ámbito de las plantaciones, y la diversificación industrial reduce el valor de estas últimas.

Palabras clave:

Valor de la empresa, diversificación internacional, diversificación sectorial, estructura de propiedad.

■ 1. Introduction

There has been a revival of interest in examining the relationship between international diversification and corporate value in the literature of various scholarly research areas such as international finance, strategic management, and international business. This topic is gaining more prominent ground of attention in recent years, since many corporations from different countries, advanced as well as emerging, are venturing into international markets in this globalization era. Literally, international diversification has long been considered as an important and forward-looking business strategy (Ayal and Zif, 1979). Even for firms in the developing countries, with no exception of Malaysia, international diversification had gradually become integral part of the business growth strategy since the late 1980s. Evidently, developing countries have emerged as significant contributors to the world's outward foreign direct investment (OFDI) ever since then. As for Malaysia, began in the late 1990s, it has experienced a big leap in its OFDI where it rose from a low of RM0.45billion (approximately USD\$0.15 billion) in 1980 to RM10.41 billion (approximately USD\$3.4 billion) in 1997, and further to RM36.7 billion (approximately USD\$12 billion) in 2007 (Goh and Wong, 2010).

Indeed, these numbers have indicated that foreign investment by Malaysian corporations has grown remarkably to an extent that the country as a whole has faced a net outflow of investments in recent years. This increase in foreign investments was mainly due to the near saturated and mature domestic market, the increasingly competitive business environment, and also the government's trade liberalization policies, in which these Malaysian companies are desire to seize new investment opportunities beyond Malaysian shores. Needless to say, there are also many other firm-specific reasons behind the international diversification engaged by corporations that have already been highlighted extensively in many of the previous studies. Even though there are many potential benefits of investing overseas, the costs cannot be negligible. The weigh between the benefits and costs of investing overseas must be properly evaluated to confirm whether internationally diversified firms can actually increase the firm value or otherwise.

Despite the abundance of literature on diversification-performance, there is little agreement on whether the two have a positive, negative, or no relationship. Thus far, many empirical studies conducted to investigate the corporate benefits of international diversification have yielded inconsistent results. The earlier studies mostly conducted for the U.S firms, suggest that international diversification do not benefits corporations (Lang and Stulz, 1994; Berger and Ofek, 1995; and Servaes, 1996; Denis *et al.*, 2002). Their studies also document the U.S firms that diversify along different industries trade at a discount relative to focused firms. However, many of these studies do not simultaneously control the effects of industrial and geographical diversification. This

brings an implication that the negative effect of international diversification on firm value could be attributed to the firms' industrial diversification, instead of its cross-country diversification engagement. Fauver *et al.* (2004) suggest that many of these firms that are internationally diversified, are also industrial diversified, and thus it is difficult to disentangle the effects of these two variables without simultaneously controlling for the two effects. To further cite their findings, who use "excess value" proposed by Berger and Ofek (1995) with modification, as a measurement for firm value, they find industrial diversification reduces firm value in the U.K and the U.S, but not in Germany. Furthermore, they find the U.S multinational firms trade at a discount relative to firms that operating only in the domestic market, whereby the international diversification has no significant effect on the firm value of firms based in Germany and the U.K.

In contrast, Bodnar *et al.* (1999) find the internationally diversified firms in the U.S have higher values relative to firms concentrated only on domestic markets. To cite a few other studies, Morck and Young (1991) find a positive relation between international diversification and firm value for the U.S firms. Other studies outside the U.S firms, for example, Delios and Beamish (1999) document a positive relationship between international diversification and performance for Japanese firms. Lins and Henri (1999) find no significant industrial diversification discount on firm values in Germany, but a significant discount in Japan and in the U.K. Also, one interesting point can be drawn from their study is that different corporate governance standards might have contributed to the different impact of international diversification on firm value in a country. Some other studies have also supported this evidence by suggesting that agency problems are the main costs in the international diversification on firm value (Jensen, 1986; Stulz, 1990; Meyer *et al.*, 1992).

In this paper, we first attempt to investigate the effect of international and industrial diversification on Malaysian firm values as a single entity. Firms from emerging markets can have quite different characteristics from their counterparts headquartered in the advanced countries in terms of; capital intensity, growth opportunities, and the degree of market integration with the international markets. Thus it is worthwhile to explore the impacts of the international diversification at the firm level. Fauver *et al.* (2003) suggest that the effects in the advanced markets do not necessarily extend to the less developed countries. The likelihood of the results is expected to be different from most of those advanced countries for the reasons mentioned earlier. That is, we expect both the international diversification and industrial diversification to enhance the firm value in Malaysia.

Secondly, we extend our study to examine the effects of international diversification on firm value among different industries in Malaysia based on domestic industrial classification standard used in Bursa Malaysia. This is considered as a bold attempt

to examine the effect of international diversification on different industries in the same country as thus far no study has investigated on this aspect. The rationale behind this study is that different industries are grounded to different levels of competitive and legal environment, thus different industries may respond differently to international diversification. However, our study does not further explore the exact reasons of why some industries may have positive result, while some may have negative result, and others may show no relation. Perhaps this can be considered for future research. The objective is that we are trying to show whether there are variations in the value of diversification among different industries in Malaysia.

Lastly, we also extend our earlier studies by controlling for the firm's ownership structure, since ownership structure of a firm may affect the value of corporate diversification (eg., Denis *et al.*, 1997; Lins and Henri, 1999; Claessens *et al.*, 2002; Fauver *et al.*, 2003; Fauver *et al.*, 2004) As mentioned earlier, some researchers have suggested that corporate governance is one of the main factors in determining the impact on firm value. Taken together, the notion is that firms with higher ownership structure generally have less agency problem, and therefore firms engage in international diversification may enhance the firm value given there is a significant relation. Since Malaysian corporations are generally have highly concentrated ownership structure, we might expect to see Malaysian firms, on average, will have higher value in regard to international diversification.

In our study design, we are using the existing methodological frameworks proposed by Berger and Ofek (1995), and Fauver *et al.* (2004), meanwhile extending it to a new empirical context. In doing so, this study contributes to the literature of diversification-performance at the firm's level in three different ways. First, we document the empirical findings of international and industrial diversification effect on corporate values of Malaysian firms, in which no study has been done on this country as a single entity thus far. Second, we demonstrate the possible difference of impact of international and industrial diversification on firm value among different industries in a single country based on the domestic industrial classification standard. Third, we further establish the fact that ownership structure plays a significant role in determining the value of a firm in relation to international and industrial diversification.

Our overall results show the consistency that, with or without controlling for ownership structure, international diversification has a negative effect on firm value in Malaysia, whereby industrial diversification gives a positive effect on firm value as we have expected earlier. These results suggest that firms in Malaysia that diversify along industrial lines will enhance the firm value. One possible explanation is that international diversification efforts can no longer effectively enhance firm value since Malaysia as a country has become increasingly integrated with the rest of the world.

Another possibility is that managers pursue international diversification for self interests even though shareholders' interests are at stake (Amihud and Lev, 1981; Jensen, 1986; Jensen and Murphy, 1990; Shleifer and Vishny, 1989). To explain the positive effect of industrial diversification, as opposed to many findings in the previous studies, we suspect that most Malaysian firms are still involved within their related core competencies in the extension of industrial or product diversification. As Chi (1994) suggests industrial diversification can create positive value as long as it is still within the scope of firm's existing resources. On the other hand, controlling for ownership structure does not alter the results and the concentration of ultimate ownership shows no significant relation with the excess value.

Moving on to our results for the impacts of international diversification on different industries, we find that: the effect is negative only on industrial products; a positive effect on consumer products and plantation; and no effects on trading and services, property and construction. One potential explanation is rest on whether that particular industry is the core industry of Malaysia. If it is, most likely international diversification can enhance the firm value or otherwise.

The rest of this paper is organized in the following manner: Section 2 outlines the methodology and robustness checks. Section 3 provides information about data sources and summary statistics. Section 4 reports the empirical results of the study. Section 5 concludes the paper.

■ 2. Methodology

2.1. Excess Value

Following the techniques developed by Berger and Ofek (1995), and later modified by Fauver *et al.* (2004), we employ the same valuation methodology where we estimate the “excess value” of each firm. The main advantage of this method is that it controls for the firm's industry(s). In plain financial language, the excess value can be understandably defined as any extra value above the market value, but obtaining the value could be different from one measure to another. For the method used in this context, excess value is calculated using natural logarithm of the ratio of actual to imputed market value of each individual firm. Even with this narrow definition of excess value, how we calculate each value can differ as well. In the previous studies, the actual value of firm were measured using capital-sales ratio, capital-assets ratio, and capital-earnings ratio, but they all yielded similar results (eg., Berger and Ofek, 1995; Bodnar *et al.*, 1999; Denis *et al.*, 2002; Fauver *et al.*, 2004). In our analysis, we solely employ capital-sales ratio to calculate the actual

value of each firm since we lack of segment assets and earnings for our sample data, whereby the imputed value is calculated as the median market-sales ratio of all single-segment firms in the same industry.

Our approach is very similar to the methods used in the previous studies as mentioned earlier, but with some exceptions. First, we use domestic industrial classification standard to calculate the imputed value, as opposed to using SIC codes. This is to facilitate the discussion on the impacts of international diversification on different industries in the context of Malaysia. Second, we only use domestic benchmark in which the firm's value is compared to single-segment domestic firms that operate in the same industry. By doing this way, it allows us to be more focus to answer the fundamental question on whether companies should embark on diversification strategy, internationally as well as industrially, or not at all.

2.2. The Baseline Model

In testing for the effect of industry diversification and international diversification on firm value, it is also imperative to consider other factors that could affect the firm's market-sales ratio (see Lang and Stulz, 1994; Berger and Ofek, 1995; Lins and Henri, 1999; Fauver *et al.*, 2004). These other determinants include the firm's size, profitability, growth opportunities, and leverage. Our baseline model with two additional diversification factors is given as below:

Excess value = f (Size, Profit, Growth Opportunities, Leverage, International Diversification, Industry Diversification)

To estimate the above model empirically, we pooled all the sample firms and estimate the following regression:

$$LEV_{it} = \alpha + \beta_1 RLTA_{it} + \beta_2 ROIS_{it} + \beta_3 RCES_{it} + \beta_4 RLEV_{it} + \beta_5 D_{International,it} + \beta_6 D_{Industry,it} + e_{it} \quad (1)$$

where i and t is the firm and time dimension of the data; EV has been defined in the previous section, that is, the natural log of ratio of firm's market capital value to its imputed value. The log of assets (LTA) is used to represent the firm size. The operating-sales ratio (OIS) is employed as a proxy for the firm's profitability. Capital expenditure-sales ratio (CES) acts as a measure for growth opportunities, and ratio of debt to common share equity is taken to proxy for firm leverage status (LEV). All the accounting measures are based on International Financial Reporting Standard (*IFRS*). In the regression, we follow Fauver *et al.* (2004) to transform all the independent variables into relative terms since the dependent variable (excess value) is measured in relative term. So for all the four explanatory variables, we deduct the

annual industry average to obtain four new series, i.e. relative *LTA* (*RLTA*), relative *OIS* (*ROIS*), relative *CES* (*RCES*), and relative *LEV* (*RLEV*). The international diversification dummy ($D_{International}$) is equal to 1 for multinational firms (firm that has more than 10% foreign sales ratio) and equal to 0 for domestic firms. The industry diversification dummy ($D_{Industry}$) is equal to 1 for multi-product firms (firms that has more than one industry involvement) and equal to 0 for focused firms.

2.3. Robustness Check I: Controlling for Ownership Structure

As mentioned in the previous section, agency costs associated with ownership structure must be taken into account since it might have correlation with firm value as evidenced in previous literature (eg., Demsetz and Lehn, 1985; Morck *et al.*, 1988; McConnell and Servaes, 1990; Denis *et al.*, 1997; Lins and Henri, 1999; Holderness and Sheehan, 2000; Claessens *et al.*, 2002; Fauver *et al.*, 2003; Fauver *et al.*, 2004). To a certain extent, ownership structure could partly dictate the value of corporate diversification. As a result, it is important that we control for ownership structure when estimating for the impacts of diversification on firm value.

Ultimate ownership (UO) is employed to represents ownership concentration. Following Claessens *et al.* (2002), the ultimate ownership is determined based on the control rights of the ultimate owner of the largest shareholder which comprise of direct and indirect shareholdings. In addition, we also controlled for the square of the ultimate ownership (UO^2) in order to test whether the relationship between ultimate ownership and firm value is non-linear. This variable is included here as there are a number of empirical studies such as Morck *et al.* (1988), Davies *et al.* (2005) and Song *et al.* (2007) provide evidence that the said relationship is non-linear. The non-linear relationship is expected to be resulted by the net effect between alignment and entrenchment effects (King and Santor, 2008). The two mentioned variables are added to the baseline model to yield equation (2) as follow:

$$LEV_{it} = \alpha + \beta_1 RLTA_{it} + \beta_2 ROIS_{it} + \beta_3 RCES_{it} + \beta_4 RLEV_{it} + \beta_5 D_{International,it} + \beta_6 D_{Industry,it} + \beta_7 UO_{it} + \beta_8 UO_{it}^2 + e_{it} \quad (2)$$

Besides ultimate ownership, the identity of the owners which have been proven to have influence on firm valuation in previous literatures is also controlled under equation (3). Government firms could have higher performance as the management is more alert about improving firm value under the watchful eyes of the government and the public (Lau and Tong, 2008). However, these firms could perform poorer than other firms as they have social responsibilities (Sulong and Mat Nor, 2008). When the owner is foreign investor, firm could have better valuation as the owner are most probably capable of injecting capital and transferring managerial expertise and technology from their country

to the firm (Sulong and Mat Nor, 2008), however this type of firms could also lead to poorer firm value as the owners are facing difficulties in monitoring the firms when they are not staying at the country where the firms are located (Wiwattanakantang, 2001). The hiring of professionals who have no shareholdings in running the business might not be a guaranteed for profit maximization goals (Kim and Lyn, 1990). Two dummy variables are constructed $D_{Foreign}$ and $D_{Government}$ to indicate whether a firm is owned by foreign investors and the government, respectively. Foreign investors are referring to foreign family or corporation. The government is either the federal or the state government. The benchmark group is firms owned by family, either an individual or a group of family members. The dummies enable us to identify whether foreign and government firms outperform or underperform family firms.

$$LEV_{it} = \alpha + \beta_1 RLTA_{it} + \beta_2 ROIS_{it} + \beta_3 RCES_{it} + \beta_4 RLEV_{it} + \beta_5 D_{International,it} + \beta_6 D_{Industry,it} + \beta_7 UO_{it} + \beta_8 UO_{it}^2 + \beta_9 D_{Foreign,it} + \beta_{10} D_{Government,it} + e_{it} \quad (3)$$

Our final equation is derived to identify whether there are interaction effects between international and industry diversifications with the ownership variables. $(D_{International})(UO)$ and $(D_{International})(UO^2)$ [$(D_{Industry})(UO)$ and $(D_{Industry})(UO^2)$], are the interaction terms used to estimate the extent to which the effect of ultimate ownership and the square of ultimate ownership for firms with and without international [industry] diversification. Similarly for $(D_{International})(D_{Foreign})$ and $(D_{International})(D_{Government})$ [$(D_{Industry})(D_{Foreign})$ and $(D_{Industry})(D_{Government})$] are the interaction terms used to estimate whether the net value differential between foreign firms and government firms with the family firms (the benchmark group) for firms with and without international [industry] diversification. The model is as follows:

$$LEV_{it} = \alpha + \beta_1 RLTA_{it} + \beta_2 ROIS_{it} + \beta_3 RCES_{it} + \beta_4 RLEV_{it} + \beta_5 D_{International,it} + \beta_6 D_{Industry,it} + \beta_7 UO_{it} + \beta_8 UO_{it}^2 + \beta_9 D_{Foreign,it} + \beta_{10} D_{Government,it} + \beta_{11} (D_{International,it})(UO_{it}) + \beta_{12} (D_{International,it})(UO_{it}^2) + \beta_{13} (D_{International,it})(D_{Foreign,it}) + \beta_{14} (D_{International,it})(D_{Government,it}) + \beta_{15} (D_{Industry,it})(UO_{it}) + \beta_{16} (D_{Industry,it})(UO_{it}^2) + \beta_{17} (D_{Industry,it})(D_{Foreign,it}) + \beta_{18} (D_{Industry,it})(D_{Government,it}) + e_{it} \quad (4)$$

2.4. Robustness Check II:

Testing the effects of diversification based on individual industry

Based on the domestic industrial classification standard used in Bursa Malaysia, we apply another robustness checking with separate panel regression for every industry. For this purposes, we only estimates equation (3) for each industry as it already incorporate equation (2); we also ignore equation (4) as it cannot be estimated for every industry as not all industry has meaningful value for the interactive terms.

2.5. Robustness Check III:

Testing the effects of diversification based on individual industry

As we are pooling firms across 9 years data, cross-sectional and time series dependence is a potential econometric concern for the pooled regression. We do not adopt the fixed-effect panel specification as our dependent variable (firm excess value) and its explanatory variables are all in relative forms and thus should expect no more firm effect. However, to ensure our estimates are robust to autocorrelation and errors-in-variables problem, we also estimate equation (3) using an alternative solution based on Fama and MacBeth (1973). The Fama-MacBeth procedure estimates a separate cross-sectional regression for each year and then collects the time series of the mean of the coefficients. The standard errors of the time-series mean then are then adjusted for heteroskedasticity and serial correlation. To address the errors-in-variables problem, we further apply the weighted least-squares (WLS) methodology to calculate the alternative precision-weighted time series averages of the coefficients of the cross-sectional regressions.

■ 3. Data and summary statistics

We collected annual firm data for the year 2001 to 2009. Our initial sample cover the entire 844 publicly listed firms in Bursa Malaysia Main Board in the Worldscope database. From this set of data, we remove firms that have missing data for more than three years. In order to be consistent with previous established research in this related area, we exclude financial services. As a result of this systematic filter, we end up with 267 firms across with the total panel observations of 2,383 along 9 years. The Worldscope database directly breakdowns the sales according to product and geographical markets. Following Fauver *et al.* (2004), we categorize firms into four categories based on each firm's international and product diversification: domestic/focused; domestic/multi-industry; international/focused; international/multi-industry. For international diversification, we follow previous research (eg., Lins and Henri, 1999; Fauver *et al.*, 2004) that firms with more than 10% in their foreign sales are considered as internationally diversified. On the other hand, firms with more than one product based on two-digit Standard Industrial Classification (SIC) codes are considered as product diversified.

Table 1 summarizes the sample of all 267 firms along nine-year period (2001-2009) according to the four categories (domestic/focused, domestic/multi-industry, international/focused, international/multi-industry). The mean values were calculated for each variable to facilitate comparisons between the four categories. It is interesting to find that firms without any types of diversification (domestic/focused) have the

highest leverage ratio and operating income-sales ratio. These results suggest that the domestic/focused firms are on higher debt structure relative to firms from the other three categories that are more diversified in either geographical, industrial, or both. Theoretically, a firm with higher leverage ratio should lead to higher profitability assuming everything else is constant (measured by operating income-sales ratio). The international/multi-product diversified firms have the highest growth potential as shown by the capital expenditure-sales ratio. On the other hand, domestic/multi-product firms have the highest market-sales ratio and also the excess value. Interestingly, these results suggest that domestic firms (but industrial diversified) would enhance the value of the firms relative to multinational conglomerates headquartered in Malaysia.

● **Table 1. Summary statistics for sample firms by industrial and international diversification**

Variable	Single-industry Firms				Multi-industry Firms			
	Domestic		International		Domestic		International	
	Mean		Mean		Mean		Mean	
Foreign sales ratio	0.4851	(1.7617)	40.7328	(24.1539)	1.4286	(2.6126)	41.8405	(24.5307)
Total asset	561771	(828782)	869603	(1724690)	1683265	(4175501)	2977039	(6782842)
Total capital	389022	(543405)	622235	(1264708)	1288192	(3319223)	2275761	(5358215)
Leverage ratio	0.0573	(0.6229)	0.0495	(0.5156)	0.3111	(1.0753)	0.4175	(3.3548)
Operating income/sales	0.1203	(0.2184)	0.0552	(0.1402)	0.0640	(0.3795)	0.0790	(0.1647)
Capital expenditure /sales	2.5546	(6.3672)	0.9433	(0.5754)	24441.13	(265448.10)	2.6872	(5.1804)
Ownership concentration	47.7072	(15.4419)	45.6157	(12.2742)	45.3295	(16.3717)	43.3512	(17.3431)
Market capital/sales	7.5051	(13.8513)	7.9452	(10.7456)	11.1423	(69.9745)	7.8219	(11.0392)
Excess Value	0.9300	(5.9097)	0.1429	(0.5382)	1.5051	(10.9137)	1.1339	(4.7021)
Observations	328		119		694		593	

Note: Figure in the parenthesis is standard deviation.

● **Table 2. Pooled regression estimates of excess value for Malaysian listed firms over 2001-2009**

	Model (1a)	Model (1b)	Model (1c)	Model (1)	Fama-MacBeth#
Intercept	-0.3646 (0.0548)*	-0.2006 (0.3245)	-0.4198 (0.0329)**	-0.2465 (0.2422)	-0.4640 (0.1485)
<i>RLTA</i>	0.2445 (0.1982)	0.1528 (0.4590)	0.2270 (0.2568)	0.1137 (0.5989)	0.3024 (0.2853)
<i>ROIS</i>	0.0004 (0.0783)*	0.0004 (0.1007)	0.0004 (0.1016)	0.0003 (0.1144)	0.0067 (0.5505)
<i>RCES</i>	0.1472 (0.0000)***	0.1255 (0.0000)***	0.1475 (0.0000)***	0.1247 (0.0000)***	0.1453 (0.0000)***
<i>RLEV</i>	0.0008 (0.0280)**	0.0009 (0.0476)**	0.0007 (0.0460)**	0.0008 (0.0983)*	-0.0175 (0.1233)
<i>D_{International}</i>	-	-0.0555 (0.1577)	-	-0.0819 (0.0451)**	-0.0899 (0.0249)**
<i>D_{Industry}</i>	-	-	0.1100 (0.0100)**	0.1545 (0.0007)***	0.1803 (0.0001)***
Firm	267	244	264	238	238
Observations	2,383	1,814	2,240	1,725	1,725
<i>R</i> ²	0.0725	0.0607	0.0768	0.0658	0.0333
Adjusted <i>R</i> ²	0.0710	0.0581	0.0748	0.0626	-
<i>F</i> -statistic	46.4967 (0.0000)***	23.3677 (0.0000)***	37.1802 (0.0000)***	20.1809 (0.0000)***	44.77 (0.0000)***

Note: Models (1a), (1b), (1c) and Model (1) are based on pooled regression with robust standard errors based on Panel Corrected Standard Error (PCSE) methodology of Beck and Katz (1995); specifically we adopted the period weights PCSE which handles cross-section clustering. Fama-MacBeth refers to the estimator which is based on procedure of Fama and MacBeth (1973) which produces the precision-weighted time series means (weighted least-squares, WLS), and the standard errors computed are computed based on Newey-West correction corresponding to lag one. The *R*² of the model is the average value of the *R*² from the cross-sectional regressions in the first step of the Fama-MacBeth procedure. (*), (**), and (***) denote (10%), (5%) and (1%) statistical significance, respectively. Figure in the parenthesis is probability value.

■ 4. Empirical results

Table 2 presents the pooled regression results for a few restricted variation of Model (1). We start with Model (1a), including only the four control variables. All the four control variables basically contribute positively to firm excess value and they are statistically significant, except for size (*RLTA*). The *R*² of the model is about 7.25%. We then add an international diversification dummy in Model (1b), an industry diversification dummy in Model (1c), and both dummies together into Model (1).

Basically the estimates for all the variables are consistent across various specifications, the international diversification dummy not being significant in Model (1b), but turning significant in Model (1). We focus on Model (1) which has R^2 of 6.58% for further discussion. Note the number of firms pooled for each specification differ slightly as some firms does not have complete information on international and industry dummies. We have 267 firms in total but only 238 firms with the 2 dummy are included. For the control variables, we find that only the estimated coefficient of *CES* (relative expenditure-sales ratio) and *RLEV* (relative leverage ratio) is positively related to excess value. These results once again reconfirm the findings of previous studies that firms with greater growth opportunities are most likely expected to have higher excess value. The estimates in Model (1) for international diversification reveal a discount of 8.19% relative to focused/domestic firms in Malaysia at the 5% significant level. The results suggest that multinational firms in Malaysia are valued less than their domestic counterparts at home country. On the other hand, the results show the industrial diversification dummy increases the value of firms by 15.45% relative to focused/domestic firms at 1% significant level. This indicates that multi-industry firms are valued higher than the focused/domestic firms in Malaysia. These estimates are again consistent in the Fama-MacBeth estimates, showing no issue on our econometric specifications.

Next, Table 3 reports the results for Model (2) that controls for ownership structure. We find that the results are consistent with the estimates in Table 2. That is, firms that diversify across countries continue to trade at a discount relative to domestic/focused firms, and firms that diversify along product lines continue to trade at a premium. The overall results also show that the degree of ultimate ownership and its squared term does not have significant relationship with the excess value. We further add a new variable of ownership identity (local, foreign, or government) as a dummy in Model (3). The results are quite consistent with Model (2), except it shows that the international diversification is no longer significant with excess value. The results also reveal that Malaysian firms with foreign ultimate ownership have less value relative to firms with local ultimate ownership. With regard to ownership concentration, Model (2) and Model (3) reveal conflicting results to certain extent that is worth exploring. Our further investigation shown in Model (4) indicates that higher ultimate ownership (higher ownership concentration) does add value to internationally diversified firms only (but not on domestic firms). And Model (4) shows a step further: the internationally diversified firms in Malaysia with foreign ultimate ownership have a higher excess value relative to local ultimate ownership. However, incase of multinational firms with government ultimate ownership, the excess value is lower compared to local (private) ultimate ownership. Model (4) also demonstrates that the foreign ultimate ownership will also increase the excess value for firms involved in more than one industry. In terms of both sign and magnitude, all the estimates in Models (2) to (4) are also consistent under Fama-MacBeth estimates.

Finally, Table 4 provides the pooled regression results for the excess value of six industries in Malaysia selected earlier. We drop out industries with sample less than ten companies. According to the results, firm size is significantly positive with firm excess value for trading/services industry, but negatively related to excess value on plantation industry. These results suggest that larger firms in the trading/services industry might have greater value. On the contrary, firms in the plantation industry may trade at a discount as firms become larger. As expected, the results demonstrate that greater growth opportunities lead to higher excess value for all industries except plantation. The leverage ratio is somehow rather unexpectedly showing negative for industrial products and consumer products, while for other industries are not significant. These results are not consistent with the earlier results in Table 2. However, further investigation reveals that the positive result in Table 2 is only significant at almost 10%, in which we can legitimately ignore the previous results.

Among all the six industries, we find only industrial-product industry is negatively related to the international diversification, in which firms in this industry discount the value by 30.53%. However, the international diversification increases the excess value by 14.78% and 77.81% for consumer products and plantation, respectively. The results also indicate that industrial diversification increases the excess value for firms of their core industry in industrial products (33.08%) and consumer products (16.31%), but reduces for property (86.16%).

● **Table 3. Pooled regression estimates of excess value for Malaysian listed firms controlling for ownership structure**

	Model (2)	Fama-MacBeth#	Model (3)	Fama-MacBeth#	Model (4)	Fama-MacBeth#
Intercept	-0.0876 (0.7209)	-0.2542 (0.3339)	-0.0871 (0.7229)	-0.2756 0.3038	-0.7898 (0.0502)*	-0.6796 (0.1677)
<i>RLTA</i>	0.0347 (0.8780)	0.2398 (0.3959)	0.0178 (0.9380)	0.2472 0.3898	0.2848 (0.2139)	0.4651 (0.1200)
<i>ROIS</i>	0.0003 (0.1294)	0.0069 (0.5449)	0.0003 (0.1375)	0.0072 0.5247	0.0004 (0.0837)*	0.0054 (0.6416)
<i>RCES</i>	0.1243 (0.0000)***	0.1453 (0.0000)***	0.1213 (0.0000)***	0.1397 0.0000	0.1174 (0.0000)***	0.1430 (0.0000)***
<i>RLEV</i>	0.0008 (0.0980)*	-0.0177 (0.1242)	0.0008 (0.0893)*	-0.0191 0.1235	0.0008 (0.1129)	-0.0173 (0.1195)
<i>D_{International}</i>	-0.0775 (0.0596)*	-0.0878 (0.0256)**	-0.0659 (0.1137)	-0.0692 0.1011	-0.5293 (0.0245)**	-0.6203 (0.0108)**

$D_{Industry}$	0.1545 (0.0007)***	0.1795 (0.0001)***	0.1303 (0.0062)***	0.1430 0.0015	0.9089 (0.0143)*	0.7275 (0.0090)***
UO	-0.0053 (0.2850)	-0.0075 (0.1342)	-0.0034 (0.5181)	-0.0049 0.2709	0.0177 (0.2420)	0.0044 (0.6249)
UO^2	0.0001 (0.1974)	0.0001 (0.0760)*	0.0001 (0.3671)	0.0001 0.1535	-0.0001 (0.4924)	0.0000 (0.8317)
$D_{Foreign}$	-	-	-0.1022 (0.0747)*	-0.1588 0.0049	-0.6628 (0.0000)***	-0.6860 (0.0000)***
$D_{Government}$	-	-	0.0214 (0.7517)	0.0264 0.1275	0.1975 (0.2169)	0.1286 (0.2024)
$D_{International} \times UO$	-	-	-	-	0.0206 (0.0556)*	0.0228 (0.0747)*
$D_{International} \times UO^2$	-	-	-	-	-0.0002 (0.0608)*	-0.0002 (0.1784)
$D_{International} \times D_{Foreign}$	-	-	-	-	0.2894 (0.0151)**	0.2664 (0.0244)**
$D_{International} \times D_{Government}$	-	-	-	-	-0.3511 (0.0098)***	-0.3328 (0.0009)***
$D_{Industry} \times UO$	-	-	-	-	-0.0357 (0.0295)**	-0.0266 (0.0137)**
$D_{Industry} \times UO^2$	-	-	-	-	0.0003 (0.0920)*	0.0002 (0.0477)**
$D_{Industry} \times D_{Foreign}$	-	-	-	-	0.7147 (0.0000)***	0.7037 (0.0001)***
$D_{Industry} \times D_{Government}$	-	-	-	-	-0.0142 (0.9326)	0.0931 (0.3238)
Firm	238	238	238	238	238	238
Observations	1725	1725	1724	1724	1724	1724
R^2	0.0670	0.1298	0.0688	0.1234	0.1108	0.1428
Adjusted R^2	0.0627	-	0.0633	-	0.1014	-
F-statistic	15.4134 (0.0000)***	33.8100 (0.0000)***	12.6508 (0.0000)***	24.40 (0.0001)***	11.8031 (0.0000)***	33.28 (0.0000)***

Note: Model (3) and Model (4) are based on pooled regression with robust standard errors based on Panel Corrected Standard Error (PCSE) methodology of Beck and Katz (1995); specifically we adopted the period weights PCSE which handles cross-section clustering. Fama-MacBeth refers to the estimator which is based on procedure of Fama and MacBeth (1973) which produces the precision-weighted time series means (weighted least-squares, WLS), and the standard errors computed are computed based on Newey-West correction corresponding to lag one. The R^2 of the model is the average value of the R^2 from the cross-sectional regressions in the first step of the Fama-MacBeth procedure. (*), (**), and (***) denote (10%), (5%) and (1%) statistical significance, respectively. Figure in the parenthesis is probability value.

Table 3. Pooled regression estimates of excess values for Malaysian listed firms based on industry classification¹

	Consumer	Construction Products	Industrial	Plantation	Property	Trading/ Services
Intercept	-1.5766 (0.0027)***	-3.1636 (0.0019)***	0.1692 (0.7279)	5.2353 (0.0004)***	-0.2368 (0.7552)	-2.4333 (0.0000)***
<i>RLTA</i>	0.0916 (0.7842)	0.7479 (0.4253)	0.1375 (0.7803)	-8.3985 (0.0000)***	0.9334 (0.2112)	2.4399 (0.0000)***
<i>ROIS</i>	0.0565 (0.0679)*	-0.0004 (0.8667)	0.0004 (0.0797)*	0.1806 (0.0300)**	-0.0030 (0.0000)***	-0.0358 (0.0198)**
<i>RCES</i>	0.1824 (0.0000)***	0.2427 (0.0006)***	0.1234 (0.0000)***	0.0826 (0.2080)	0.0928 (0.0000)***	0.1501 (0.0000)***
<i>RLEV</i>	-0.0341 (0.0000)***	0.0636 (0.2468)	-0.1546 (0.0000)***	0.0008 (0.0598)*	-0.0010 (0.5822)	-0.0022 (0.3660)
<i>D_{International}</i>	0.1478 (0.0216)**	-0.1446 (0.3625)	-0.3053 (0.0000)***	0.7781 (0.0036)***	-0.0223 (0.8539)	-0.1247 (0.2101)
<i>D_{Industry}</i>	0.1631 (0.0130)**	0.0719 (0.7829)	0.3308 (0.0000)***	0.2387 (0.2953)	-0.8616 (0.0000)***	-0.0240 (0.8940)
<i>UO</i>	0.0590 (0.0008)***	0.1081 (0.0017)***	-0.0094 (0.2467)	0.1198 (0.0655)*	-0.0156 (0.2177)	0.0136 (0.2168)
<i>UO²</i>	-0.0006 (0.0003)***	-0.0013 (0.0018)***	0.0001 (0.3946)	-0.0014 (0.0491)**	0.0003 (0.0222)**	-0.0002 (0.0431)**
<i>D_{Foreign}</i>	-0.2885 (0.0000)***	1.6539 (0.0356)**	-0.3922 (0.0000)***	0.3829 (0.0783)*	1.1780 (0.0000)***	-0.8901 (0.0000)***
<i>D_{Government}</i>	-0.1224 (0.2482)	0.7652 (0.0064)***	0.3675 (0.2669)	0.3136 (0.1396)	0.1988 (0.3631)	0.0725 (0.5781)
Firm	38	16	66	17	38	49
Observation	297	113	482	128	282	329
<i>R²</i>	0.3696	0.3775	0.3348	0.5768	0.2937	0.2647
Adjusted <i>R²</i>	0.3476	0.3165	0.3207	0.5407	0.2676	0.2416
<i>F</i> -statistic	16.7698	6.1852	23.7072	15.9482	11.2693	11.4466
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: (*), (**) and (***) denote (10%), (5%) and (1%) statistical significance, respectively. Figure in the parenthesis is probability value.

¹ To conserve space, we exclude the Fama-MacBeth estimates from this table. The results are generally consistent with the pooled estimates. The results are available upon request.

■ Conclusion


This paper extends the existing studies on diversification-performance nexus, but applying to the new empirical context in Malaysia. With slight modifications in measures and definitions that are more suitable in the Malaysian context, the results are consistent with some of the established literature in the previous studies. The overall results of this study reveal that international diversification reduces firm value in Malaysia, but the industrial diversification enhances it. These results may imply that the potential benefits of investing overseas are not fully utilized or materialized by the Malaysian firms. Or perhaps the costs of investing in international market outweigh those benefits. The finding that industrial diversification is able to enhance firm value may be due to the fact that those multi-industry firms are generally involved in businesses within their related core competencies. For instance, firms that used to involve in construction business, may now extend their business to property.

Following the previous studies, we also control for ownership structure, and we find that multinational firms continue to trade at a discount, while multi-industry firms trade at a premium, both at around the same magnitude (as compared to without controlling for ownership structure). These results demonstrate that ownership structure among Malaysian firms generally does not significantly affect the firm value. However, one interesting finding in this study is that foreign ultimate ownership can help firms in Malaysia to enhance the firm value. The probable explanation is that the foreign ownership in a firm smoothen the process of forming a strategic partnership in the international market through their global networking and expertise that lead to value creation for the firm.

Interestingly, we also find that if we divide the firms into different industries according to the domestic industrial classification standard, the results reveal that different industries respond in different manner to diversification strategy. Certain industries show positive relation, while others have negative, or no relation to diversification (international as well as industrial). Our results conjectured that the relationship rests on whether the industry is a core industry of Malaysia or not. If it is, then the international diversification may positively affect the firm value in that particular industry, or otherwise. Also, our results show that firms that diversify to other industry(s) must be related to their core industry in order to increase their firm value. A deeper insight of reasons why different industries react differently to diversification deserves for further research.

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